

Remarks

This is in response to the Office Action dated January 26, 2005. The Office Action first rejected claims 2 and 7-21 under 35 USC 112, first paragraph, as failing to comply with the enablement requirement. The Office Action next rejected claim 6 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action next provisionally rejected claims 1-5, 7-9 and 12-13 under the doctrine of obviousness-type double patenting over claims 1, 6, 7, 8, 9, 13, 15 and 16 of copending Application Number 09/902,806. The Office Action next rejected claim 1 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,366,373 to MacKinnon et al. (“MacKinnon”). The Office Action next rejected claims 3-6 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,426,815 to Koehler (“Koehler”). The Office Action next rejected claim 3 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,616,349 to Li et al. (“Li”). The Office Action next rejected claims 2 and 11-13 under 35 U.S.C. §103(a) as being unpatentable over MacKinnon in view of U.S. Patent No. 6,766,113 to Al-Salameh (“Al-Salameh”). The Office Action next rejected claims 4-6 under 35 U.S.C. §103(a) as being unpatentable over Li in view of Koehler.

Finally, the Office Action indicated that claims 7-9 and 14-21 would be allowable if the above rejections of those claims under 35 U.S.C. §112, second paragraph were overcome and if those claims were rewritten in independent format. Applicants appreciate the recognition of allowable subject matter.

Applicants have amended the specification to include the serial number of the referenced copending U.S. patent application. Applicants have also amended claim 1 for clarity and to correct typographical errors. Applicants have canceled claims 3-6. Applicants traverse the rejections of claims 1-2 and 7-21.

1. Amendments to the Specification

Applicants have provided a replacement paragraph to paragraph [01] at page 1, lines 1-5 to add the serial number of the copending patent application referenced in that paragraph.

2. Rejection: 35 U.S.C. §112, first paragraph

The Office Action rejected claims 2 and 7-21 under 35 U.S.C. §112, first paragraph as failing to comply with the enablement requirement. Applicants traverse.

Regarding claim 2, the Office Action states that the specification does not clearly describe about writing data onto the optical chalkboards when permitted by the control signals. However, as is described at page 8, lines 4-13:

If correct permission is granted in the control bits preceding a chalkboard (by use of, for example, a protocol), the ES may write data (an upstream message) by modulating the chalkboard. That is, modulated light enters the End Station for user N, where a portion is split off to a receiver, which recovers the downstream information, and the remainder is passed to a semiconductor amplifier (SOA)/modulator. The light contains both downstream data and long unmodulated portions (this is the optical chalkboard) upon which upstream data can be impressed by modulation. A protocol establishes, through control bits, whether or not user N can seize this “chalkboard” for modulating upstream data.

Setting control bits in a protocol is well known. As described above, permission is granted in the control bits preceding an optical chalkboard that enables a user to write data to that chalkboard. Optically modulating data onto a carrier is also well known. Thus, it will be very clear to one skilled in the art in light of the specification how to write data onto optical chalkboards when permitted by the control signals. Thus, claim 2 is clearly enabled by the specification.

Regarding claim 10, the Office Action indicates that the specification does not clearly describe how to determine when control signals permit writing of data. However, once again, the above passage clearly describes that control bits that precede a chalkboard and grant permission to write data to the optical chalkboard. Thus, once again, claim 10 is clearly enabled by the specification.

The Office Action also rejects claims 7-9 and 11-21 under 35 U.S.C. §112, first paragraph, however the Office Action fails to address how these claims are not supported. Claims 7-9 each claim “tapping a portion of light for a receiver” and “decoding, by said receiver, downstream packets” and “passing a remaining portion of light” to either a “wavelength-

independent and polarization independent modulator (claim 7), a polarizatoin independent modulator (claim 8) or a wavelength-independent modulator (claim 9). Paragraph [32] of the specification generally discusses how optical signals are routed to a receiver by splitting off a portion of light using, for example, a splitter. Paragraphs 29 and 32 also teach how the modulator can be independent of either the polarization or wavelength of an optical signal.

Regarding claims 11-21, paragraphs [28]-[35] of the present specification teach the elements of these claims. If the office persists in this rejection under 35 U.S.C. §112, first paragraph, applicants request that this rejection be pointed out with greater particularity. Otherwise, for the foregoing reasons, applicants request the withdrawal of this rejection.

3. Rejection: Double Patenting

Claims 1-5, 7-9 and 12-13 were provisionally rejected under the doctrine of obviousness-type double patenting over claims 1, 6, 7, 8, 9, 13, 15 and 16 of copending Application Number 09/902,806. In response to the obviousness-type double patenting rejection, Applicant is filing herewith a terminal disclaimer under 37 C.F.R. §1.321(c). Withdrawal of the obviousness-type double patenting rejection is requested.

4. Rejection: 35 U.S.C. §102(e) - MacKinnon

The Office Action next rejects claim 1 under 35 U.S.C. §102(e) as being anticipated by MacKinnon. In order for a claim to be anticipated under 35 U.S.C. §102, each and every limitation of the claim must be found either expressly or inherently in a single prior art reference. PIN/NIP, Inc. v. Platte Chem. Co., 304 F.3d 1235, 1243 (Fed. Cir. 2002). For the following reasons, MacKinnon fails to teach each of the elements of claim 1.

MacKinnon teaches a method for allowing reliable routing of individual optical carriers through an optical network. According to MacKinnon, routing information is impressed on individual optical carriers by a method known as sub-band quadrature coding (SQC). The optical carrier is modulated at a first frequency, and at a first intensity to impress application data on the carrier. The carrier according to MacKinnon is additionally modulated at a second frequency, preferably two orders of magnitude less than the first frequency, and at a second intensity less than the first intensity to impress management data on the carrier for routing the carrier through an optical communications network, from a source to a destination. According to the method, the management data is continuously impressed upon the carrier during transmission

of the application data. The optical carrier is multiplexed onto the fiber optic communications line, and upon reaching a first node, the carrier is demultiplexed and an intensity sample of the carrier is detected. The management data is then separated out with a low pass filter, whereupon in response the method directs the carrier signal according to the management data.

The present application teaches a WDM ring network architecture wherein the only carrier signals generated in the network originate from a single Network Node (NN). Selected wavelengths from a carrier signal form a virtual ring that operates independently of other virtual rings formed by different wavelengths of light. The NN forms and sends along the feeder ring (1) downstream data packets, (2) ‘optical chalkboard’ packets . . . and (3) control bits or signals.” As is shown in FIG. 1 and as is described at page 6, paragraph [29], the NN has WDM sources and receivers and functions to send WDM signals along the feeder ring to Access Nodes (ANs) which have, for example, Waveguide Grating Routers (WGRs). Pairs of ports in the WGRs define distribution loops in which a single wavelength, forming a distribution ring, can be accessed by one or more End Stations (ESs). The WGSs act, for example, as static Optical Add-Drop Multiplexers (OADM) that demultiplex the wavelengths on the feeder ring and directs them to users connected to ESs on the distribution ring and then multiplex wavelengths back onto the feeder ring.

Thus, as is shown in FIGs 2A and 2B and as is described in the associated description beginning at page 7, paragraph [32], optical signals are sent for example, in a unidirectional fashion from the NN along the feeder ring to ANs where selected wavelengths are demultiplexed for distribution to ESs via the distribution rings. The aforementioned optical chalkboard packets are, for example, packets generated at the NN that consist of, illustratively, all 1’s. If permitted to do so (e.g., as indicated in the aforementioned control bits in the packet stream) a user terminal connected to the ESs modifies these optical chalkboard packets to modulate data from a user onto the carrier. The modulated signal is then amplified by, for example, a semiconductor optical amplifier (SOA), before being multiplexed and transmitted back along the distribution ring. Those signals are then combined again by the WGR at the AN and then forwarded in the upstream direction to other ANs and, ultimately, the NN.

Claim 1 of the present application claims:

A method for communicating information over a WDM fiber optical ring network architecture in a metro access area using one or more wavelengths, which can

be shared by a plurality of user terminals, each user terminal coupled to an end station comprising the steps of:

- sending at least one downstream data packet;
- sending at least one optical chalk board packet consisting of a recognizable pattern; and
- sending a control signal.

The Office Action cites Fig. 10, callout number 112 of MacKinnon and column 3, line 65 through column 4, lines 1-25 of that reference as teaching the element of claim 1 of “sending at least one optical chalkboard packet consisting of a recognizable pattern.” Callout number 112 of Fig. 10, however, merely refers to “application data.” Column 3, line 65 – column, lines 1-25 of MacKinnon only teaches a well-known technique of digitally modulating an optical signal. This passage does not discuss or teach sending optical chalkboard packets as claimed in claim 1. As discussed above, the chalkboard packets of the present invention do not consist of application data but consist of, instead, all 1’s or all 0’s or another recognizable pattern. While such optical chalkboard packets do require modulation of digital 1’s or 0’s to create the recognizable pattern, this pattern is only used to identify an optical chalkboard packet to a user. It does not contain any application data, as is taught in MacKinnon. Once the chalkboard packet is received at a user terminal, if permitted to do so (e.g., as indicated in the aforementioned control bits in the packet stream) the user terminal modifies these optical chalkboard packets to modulate application data from a user onto the carrier.

For the foregoing reasons, the cited portions of the MacKinnon reference do not teach all elements of claim 1. As a result, claim 1 is not anticipated by MacKinnon and, therefore, claim 1 is allowable over MacKinnon. It follows that claim 2 is allowable over MacKinnon as being dependent upon an allowable base claim.

5. Rejection: 35 U.S.C. §103(a) – MacKinnon in view of Al-Salameh

The Office Action next rejects claims 2 and 11-13 under 35 U.S.C. §103(a) as being unpatentable over the MacKinnon in view of Al-Salameh. In order for an invention to be obvious under 35 U.S.C. §103(a), there must be some suggestion to combine or modify cited prior art references in a manner which would show or suggest all elements of the claimed invention. For the reasons discussed below, the Office Action fails to show that MacKinnon in view of Al-Salameh teach all elements of claims 2 and 11-13. Applicants therefore request the withdrawal of the rejections of these claims under 35 U.S.C. §103(a).

Claim 2 is allowable for the reasons presented above in association with the rejection of claim 1. MacKinnon does not teach the optical chalkboards as claimed in claim 2. It follows that claims 7-21 are allowable as being dependent upon an allowable base claim.

Regarding claims 11-13, the Office Action relies on MacKinnon alone, admitting that MacKinnon does not teach the steps of exiting of a light carrying data packet from an end station, re-entering an access node of light carrying data via a WDM fiber, and continuing onto a WDM fiber optic feeder ring to a next node. However, the Office Action in essence states that the claim elements of claim 11 are simply obvious because it would be possible to connect an end station to one of the network nodes. However, the MacKinnon reference only teaches a single optical fiber ring. This is different from the embodiments shown in the specification and claimed at claim 2. Specifically, as is shown in FIGs 2A and 2B and as is described in the associated description beginning at page 7, paragraph [32], optical signals are sent for example, in a unidirectional fashion from the network node along the feeder ring to access nodes where selected wavelengths are demultiplexed for distribution to end stations via the distribution rings. MacKinnon does not teach nor does it suggest such an arrangement of feeder ring and distribution rings used to connect end stations to the feeder ring. No access nodes or end stations connected to such access nodes are taught or suggested by MacKinnon. Nor are the steps of exiting of a light carrying data packet from an end station, re-entering an access node of light carrying data via a WDM fiber, and continuing onto a WDM fiber optic feeder ring to a next node. Thus, neither MacKinnon nor Al-Salameh, either alone or in combination, teach the necessary elements of claim 11. Accordingly, the Office Action has failed to show that each and every element of claim 11 is taught or suggested by those references. Therefore, claim 11 is allowable for this additional reason. As a result, claims 12-13, which are dependent directly on claim 11, are also allowable for this additional reason.

Conclusion:

Applicants have amended the specification to incorporate the serial number of a related patent application. Applicants have also made clarifying amendments to claim 1 to correct various typographical errors in those claims. Applicants have canceled claims 3-6. Applicants have traversed the rejections of claims 1-2 and 7-21. The Office has recognized that claims 7-9 and 14-21 are allowable. Once again, applicants appreciate the recognition or allowable subject

matter. For the foregoing reasons, claims 1-2 and 7-21 are allowable over the cited references. Applicant requests allowance of all claims.

Respectfully submitted,



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